MAGNUM
E N E R G Y

This addendum provides information on recent changes to the AGS (Auto Generator Start) controller and supplements the following Operator's Manuals:

• **ME-AGS:** Auto Gen Start, Network System Operator's Manual (Part Number: 64-0005 rev. 6/04).

• **ME-AGS-S:** Auto Gen Start, Stand-alone System Operator's Manual (Part Number: 64-0004 rev. 3 6/04).

> **Info:** This addendum does not apply to the three-relay AGS (Part Number: ME-AGS-WB).

Changes to page 3 (ME-AGS and ME-AGS-S)

Configuring the AGS Module

The AGS controller includes an input voltage jumper and a 4-position DIP (Dual In-line Package) switch to allow greater compatibility with a wider range of generator start/stop circuit configurations. The input voltage setting determines the controller's DC operating voltage and the DIP switch is used to select the appropriate start/stop timing sequence for your generator. Remove the top cover (unscrew 4 cover screws) to access the voltage setting and DIP switch (see figure 1).
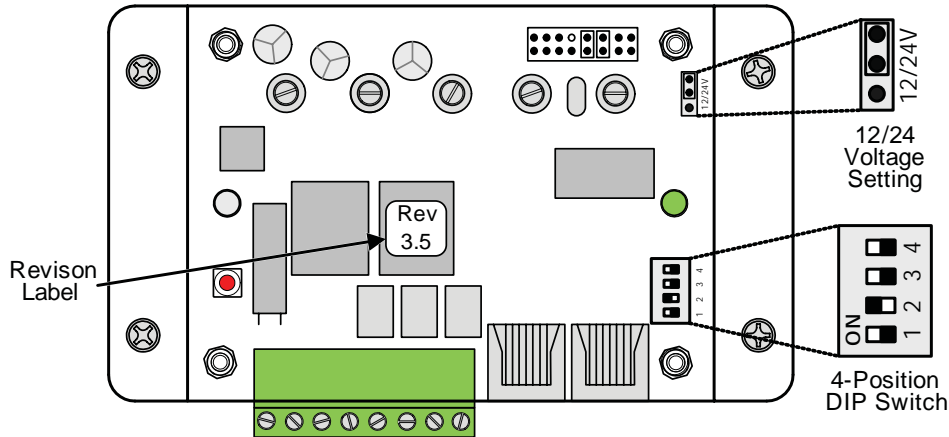

Figure 1, Inside the AGS

DC Voltage Setting - The DC input voltage setting can be configured for 12 or 24 Vdc operation. This setting is determined by the nominal DC voltage connected to terminals 3 and 4 (see figure 4 in the operator's manual).

• For 12-volt DC operation, position the jumper over the <u>bottom</u> two pins.

• For 24-volt DC operation, position the jumper over the <u>top</u> two pins.
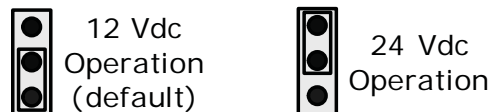

Figure 2, DC Voltage Settings

Dip Switch Positions - The AGS includes two internal relays that provide the contact closures used to automatically start and stop generators. The relay timing sequence for the two relays is determined by the configuration of the 4-position DIP switch. Refer to Table 1 below to determine and set the correct DIP switch configuration for your generator's start/stop requirements.

Info: On the GEN AND POWER I/O terminal block: Relay 1 (RY1) is connected to terminals 5 and 6; and Relay 2 (RY2) is connected to terminals 6 and 7 (terminal 6 is a common connection between RY1 and RY2).

Table 1, DIP Switch Timing Diagrams

DIP Switch Setting	Relay Operation (RY1/RY2)	Time Period
QD Mode	RY1 (N.O.), T1, T2, RUN TIME; RY2 (N.O.), T3, T3 — Generator Types: Quiet Diesel (Onan).	T1 = 20 sec. / T2 = 4 sec. / T3 = 10 sec.
3-Wire Mode	RY1 (N.O.), T1, T2, RUN TIME; RY2 (N.O.), T3, T3 — Generator Types: Marquis, Emerald, and Microquiet (Onan); Quiet Pack Series (Generac).	T1 = 10 sec. / T2 = 4 sec. / T3 = 10 sec.
Portable Mode*	*Portable Mode requires ME-AGS with Rev 3.5 or higher. RY1 (N.O.), T1, RUN TIME; RY2 (N.O.), T2 — Generator Types: EM Series with remote control (Honda).	T1 = 4 sec. / T2 = 10 sec.
2-Wire Momentary Mode	RY1 (N.O.), T1, RUN TIME; RY2 (N.O.), T2 — Generator Types: PT-ECU-63 controller with 2-wires (Powertech).	T1 = 2 sec. / T2 = 10 sec.
2-Wire Maintain Mode	RY1 (N.O.), RUN TIME, T1; RY2 (N.O.), T2 — Generator Types (maintain 2-wire connection to run): RMY Series (Kohler); DynaGen Controllers	T1 = 4 sec. / T2 = 10 sec.

Supplement for ME-AGS (with Revision 3.5 or Higher)

Important Revision 3.5 Changes

The new AGS with revision 3.5 firmware includes many improvements and new abilities. The most substantial changes are summarized here:

• **Remote Control Operation** – The new enhanced AGS menu system in the ME-RC (requires rev 1.5 or higher) now provides access to menu items that control, monitor and aid in troubleshooting the networked AGS system.

• **Charger Sense Lockout** - The networked AGS (if "enabled") now monitors the inverter's AC input and prevents the generator from automatically starting and stopping while the inverter is actively charging - typically from utility power.

• **Portable Generator Compatibility** – This revision includes a start routine (Portable Mode) for generators that require a "maintain run/momentary start" sequence - commonly found on Portable generators.

Identification and Compatibility

The ME-AGS with revision 3.5 firmware can be identified by removing the top cover and checking the REV label (see Figure 1 in this addendum); or use the ME-RC (with revision 1.5 or higher) to check the AGS revision. You can view the AGS revision level under the *TECH: 02 Revisions* or *AGS: 08 AGS TECH* menus.

The new ME-AGS is compatible with all ME-RC remote's and Magnum inverter/chargers (provided with a network port). To use all available features of the AGS with revision 3.5 firmware, the ME-RC will require revision 1.5 or higher.

Info: When the ME-AGS (rev. 3.5 or higher) is networked to a Magnum inverter, all adjustments on the AGS controller are disabled. The AGS operation is now determined by the AGS settings in the ME-RC.

Accessing the ME-AGS Menu Items

Pressing the **AGS** pushbutton on the ME-RC provides access to the AGS menu items and settings. These menu items and settings allow the networked AGS to be configured to your specific generator starting preferences, obtain operational status and obtain help with troubleshooting, if needed.

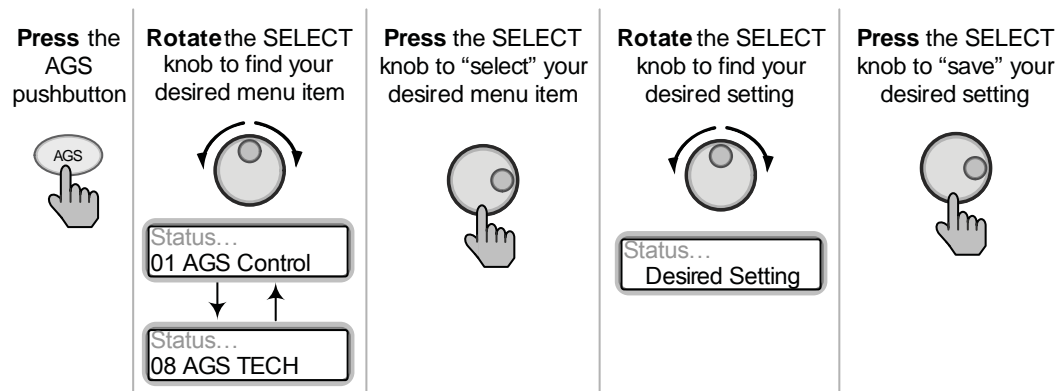**Info:** A complete map of the AGS menu items are shown in figure 4 in this addendum.

Figure 3, Accessing the ME-AGS Menu Items

ME-AGS Menu Items and Settings

Press the **AGS** menu button to access the AGS menu and then turn the rotary "SELECT" knob to view the following menu items and settings:

AGS: 01 AGS Control - This menu item is used to a) turn the AGS "off" to keep the networked AGS from automatically starting the generator; b) "Enable" the AGS, which allows the generator to automatically start 24/7 based on low battery voltage or high temperature; c) "test" the generator system; or d) "Enable" the AGS except during a "Quiet Time" period.

- The Factory Default Setting is: *AGS: 01 AGS Control = Off*.

Info: If the ME-RC loses power, the *AGS: 01 AGS Control* setting will revert back to the "Off" setting; you must access this menu item after power to the remote has returned and reselect your normal AGS operating setting ("Enable" or "Enable w/QT").

Warning: Read all safety information in your AGS operator's manual. Enabling the AGS without being aware of all safety precautions may cause harm to personnel and/or equipment.

- **AGS = Off** - This selection prevents the AGS from automatically starting the generator. This setting can also be used to immediately stop the generator when started from the AGS because of low DC voltage or high temperature.

Warning: Select the *AGS: 01 AGS Control = Off* setting before servicing the electrical or generator system.

Info: If the generator is going to be left unattended for an extended length of time, it is highly recommended that the AGS be set to the *AGS: 01 AGS Control = Off* setting.

- **AGS = Enable** - This selection allows the AGS system to automatically start the generator based on high temperature (see *AGS: 04 Start Temp F*) or low battery voltage (see *AGS: 05 Start Volts*). Once the generator is running, it continue's for a set amount of time (see *AGS: 03 Run Time Hour*). After enabling the AGS, ensure the *AGS: 02 AGS Status* displays "AGS: Ready".

- **AGS = Test -** This selection is used to start and run the generator for 30 seconds, testing the AGS start/stop wiring and the ME-RC communications to the AGS system.

Warning: While the AGS is performing this "Test", the generator can only be immediately stopped by removing power to AGS, this can be easily done by removing the green terminal block from the AGS.

- **AGS = Enable w/QT -** This selection is similar to the *AGS: 01 AGS Control = Enable* setting, but sets a Quiet Time (QT) period. When this selection is made, the *AGS: 06 Set Time* clock settings appear, prompting you to set the current time. Once the correct time has been entered, choose the required *AGS: 07 Quiet Time* period. After enabling the AGS, ensure the *AGS: 02 AGS Status* displays "AGS: Ready"; it may display "AGS: Quiet Time" if the current time is within the Quiet Time period.

What is Quiet Time and why would I use it? Quiet Time is an AGS program that ignores the auto starting conditions (i.e. low DC voltage and high temperature) during specific hours of the evening and early morning. This feature is used to prevent the generator from automatically starting so that you can comply with nighttime low-noise requirements in some RV Park's/Rest Area's.

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AGS: 02 AGS Status - This selection displays "read-only" messages that give the current operating status of the AGS. This selection also provides information to help troubleshoot the AGS if a fault condition occurs.

• **AGS: AC In** - The AGS has determined that the networked inverter is actively charging, but not from the generator that is controlled by the AGS. This typically indicates that utility power is connected to the inverter to allow it to charge. While the display indicates "AGS: AC In", the AGS is prevented from automatically starting the generator.

• **AGS: Fault Temp** - The AGS attempted to start the generator because the temperature on the AGS sensor was higher than the *AGS: 04 Start Temp F* setting; the fault occurred because the B+ run signal was not sensed.

• **AGS: Fault Test** -The AGS attempted to start the generator because the 30-second "AGS = Test" was selected from the *AGS: 01 AGS Control* menu or the red "PUSH TO TEST" button on the AGS was pushed; the fault occurred because the B+ signal was not sensed.

• **AGS: Fault VDC** - The AGS attempted to start the generator because the voltage on the inverter batteries was lower than the *AGS: 05 Start Volts* setting for more than 2 minutes; the fault occurred because the B+ signal was not sensed.

• **AGS: Manual Run** - The AGS is sensing a B+ run signal (only occurs if AGS is "Enabled"). This typically indicates that the generator that is normally controlled by the AGS has been manually turned on.

• **AGS: No Comm** - The AGS is not communicating with the remote. This typically means an AGS is not installed; or an older version AGS (revision 3.4 or lower) is connected - this is normal. The older version AGS requires the adjustments on the AGS to be configured for correct operation. If a newer AGS (revision 3.5 or higher) is installed, see the *AGS Troubleshooting* section (page 7 of this addendum).

• **AGS: Off** - The AGS is communicating with the remote, but is "Off" (not "Enabled"), therefore the AGS can not automatically start the generator.

• **AGS: Quiet Time** - This status indicates that the AGS is prevented from automatically starting the AGS because the current time is within the Quiet Time range (see *AGS: 07 Quiet Time* setting). After the current time is outside the Quiet Time setting, the AGS will be able to automatically start the generator once an auto-start condition is met.

• **AGS: Ready** - The AGS is "Enabled" and is ready to start the generator if a low battery voltage (see *AGS: 05 Start Volts* setting) or high temperature (see *AGS: 04 Start Temp F* setting) condition is met and turned on.

• **AGS: Start Temp** - The generator is starting or running because the temperature around the AGS sensor was higher than the *AGS: 04 Start Temp F* setting.

• **AGS: Start Test** - The generator is starting or running because the 30-second "AGS = Test" was selected from the *AGS: 01 AGS Control* menu or the red "PUSH TO TEST" button on the AGS was pushed.

• **AGS: Start VDC** - The generator is starting or running because the voltage on the inverter batteries was lower than the *AGS: 05 Start Volts* setting for more than 2 minutes.

AGS: 03 Run Time Hours - This setting determines the length of time the generator will run once the generator has started because the *AGS: 04 Start Temp F* or *AGS: 05 Start Volts* setting has been reached. The run time can be set from 0.5 to 6.0 hours in 0.5Hr increments.

- Factory Default Setting: Run Time = 2.0Hr

AGS: 04 Start Temp F - This setting allows you to enable and set a high temperature value that will cause the generator to automatically start. When the temperature around the AGS temperature sensor increases to the temperature setting, the generator will be automatically started and run based on the *AGS: 03 Run Time Hour* setting. The AGS will attempt to start the generator immediately once the temperature rises to this setting. The temperature range selections are 65F to 85F. If this feature is not needed, leave it at *Start Temp = Off.*

- Factory Default Setting: StartTemp = Off

<u>Why would I need temperature start, give me an example?</u> For RV users, you could turn the air conditioner on (which is only powered when the generator comes on) and leave the coach. The generator would come on when the temperature rises to your temperature setting, thereby turning on the air conditioner. This allows you to leave pets and precious items in your coach while dry camping in hot weather knowing your coach will stay cool and comfortable - plus, while the generator is on, your house batteries are being charged.

AGS: 05 Start Volts - This setting allows you to enable and set a low battery voltage value that will cause the generator to automatically start. When the battery voltage drops to a low voltage setting, the generator will be automatically started and run based on the *AGS: 03 Run Time Hour* setting. There is a 2 minute delay once the battery voltage falls to this setting before the AGS attempts to start the generator. The voltage range is 10.0 VDC to 12.2 VDC (for 12 VDC systems) or 20.0 VDC to 24.4 VDC (for 24 VDC systems). If this feature is not needed, set it to *StartVDC = Off.*

- Factory Default Setting: StartVDC = 11.0V

Info: The inverter's *SETUP: 02 LowBattCutOut* setting should be at least 1.0 volt lower than the AGS: *05 Start Volts* setting. This ensures the generator starts and begins charging before the inverter shuts down because of a "Low Battery" fault.

AGS: 06 Set Time - The remote has a 24-hour internal clock that determines the time which allows the Quiet Time feature to work correctly Once set, the clock will continue to keep time. In the event of loss of power to the Remote, you must reset the clock. If the Quiet Time feature is not used, the clock is not required to be set.

To set the current time: Access the *AGS: 06 Set Time* menu and press the SELECT knob. This displays the "Hour" menu. Turn the SELECT knob clockwise to increase the hour or counter-clockwise to decrease the hour. Press the "SELECT" knob to save the Hour setting and advance to the 'Minutes' setting. Repeat the steps and advance to the 'AM/PM' setting. Press the knob to save your selection.

Info: If the current time is correct, you can press any of the menu buttons to escape without affecting the settings or continue pressing the SELECT knob to advance through the clock settings without making any changes.

AGS: 07 Quiet Time - This selection determines which specific hours of the evening and early morning that the AGS is prevented from starting the generator. There are five time ranges that can be selected; 9PM - 7AM, 9PM - 8AM, 9PM - 9AM, 10PM - 8AM, or 11PM - 8AM. To use the "Quiet Time" feature, select the *AGS= Enable w/QT* setting under the *AGS: 01 AGS Control* menu and the *AGS: 06 Set Time* is adjusted to the current time.

• Factory Default Setting: Quiet = Off

> **Info:** If the generator is running when the Quiet Time evening hour (PM) is reached, it will automatically stop and will not be able to automatically start until after the Quiet Time morning hour (AM) has passed.

AGS: 08 AGS TECH - This selection allows you to access "read-only" displays that provide information to help service personnel troubleshoot the AGS.

• **Gen Run:** This display shows the time the generator has been running after it has been automatically started. The Gen Run time is displayed in 0.1Hr (6 minutes) increments.

• **AGS VDC:** This display provides the voltage of the batteries connected to the AGS - these are normally the same batteries that are connected to the inverter. This voltage reading is used to start the generator when it falls to the *AGS: 05 Start Volts* setting or lower for two minutes continuously.

• **Temp:** This display provides the Celsius (C) and corresponding Fahrenheit (F) temperature readings from the remote temperature sensor (if connected), This temperature reading is used to start the generator when it rises above the *AGS: 04 Start Temp F* temperature setting.

> **Info:** If the temperature sensor is not connected or open - the display will show "Temp: 122C/252F".

• **Revision**: This menu displays the firmware revision level of the AGS.

AGS Troubleshooting

View the *AGS: 02 AGS Status* display on the remote control to determine the operational status of the AGS:

• **No comm** (using AGS revision 3.5 or higher)**:**

> Ensure the AGS communication cable is correct and is connected from the NETWORK port on the AGS to the NETWORK port on the inverter. If the required communication cable is damaged or missing, a standard telephone cable can be temporary substituted until the required communication cable is used.

• **AGS Fault Conditions:** 1. The status LED on the AGS turns red (indicates a generator fault condition); or 2. The *AGS: 02 AGS Status* displays:

• AGS: Fault Temp   • AGS: Fault Test   • AGS: Fault VDC

> **Remedy:** Manually start the generator and check the B+ run signal voltage on the GEN AND POWER I/O green terminal block. The B+ run signal must be 10.5 vdc to 50 vdc from terminal 2 (positive) to terminal 4 (negative) only when the generator is running. If the B+ run signal is not correct or missing, recheck the installation and all connections.

AGS Menu Map (using ME-RC Revision 1.5 or higher)

The following figure is a complete overview of the AGS settings and info displays available in the ME-RC; this should help with menu navigation.
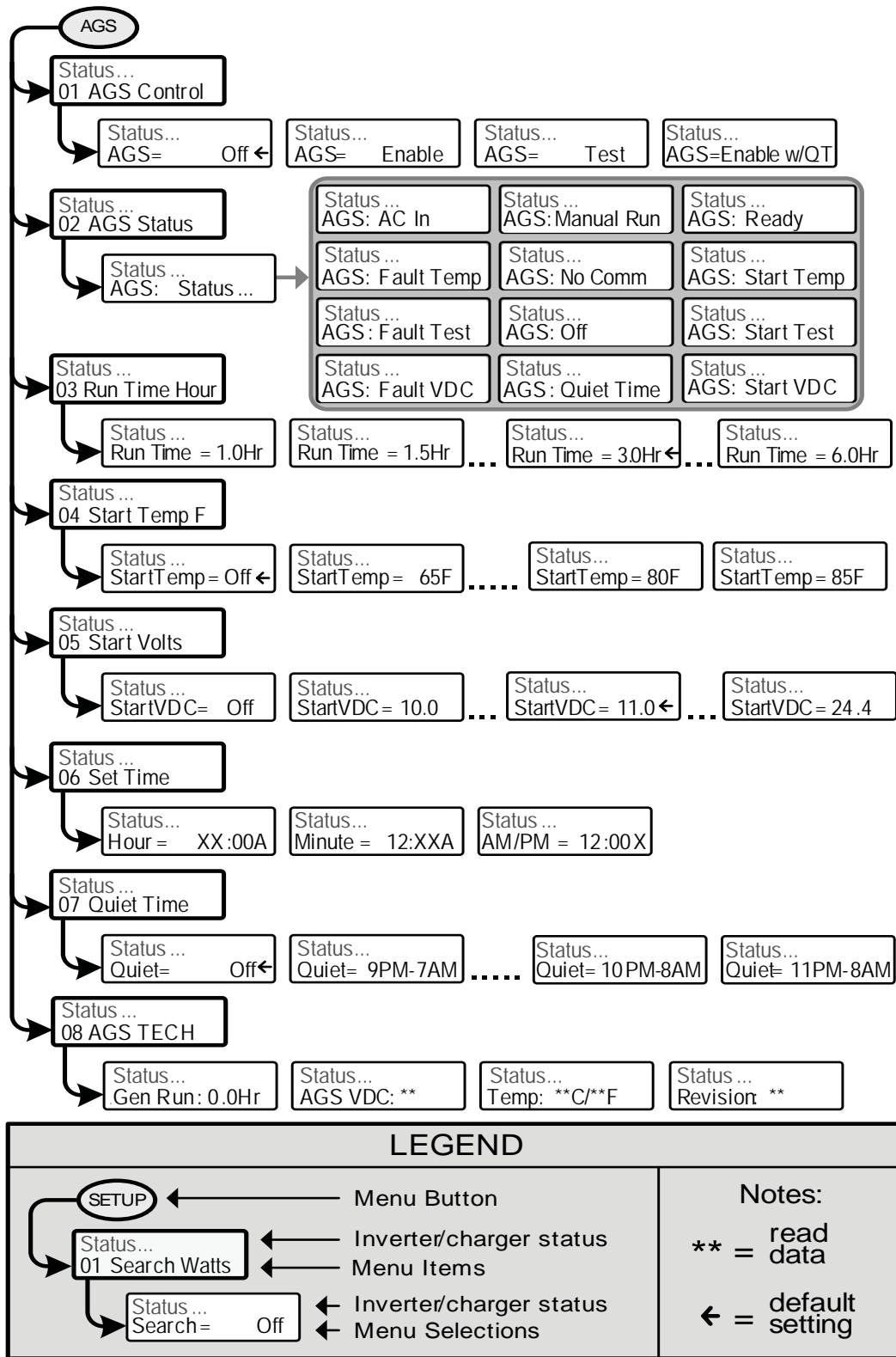

Figure 4, AGS Menu Map